USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2006AL49B

Title: The Fate, Transport, and Effects of Veterinary Antimicrobial Mixtures in the Environment

Project Type: Research

Start Date: 03/01/2006

End Date: 02/28/2007

Congressional District: Third

Focus Categories: Non Point Pollution, Management and Planning, Agriculture

Keywords: Animal waste, Contaminant transport, Leaching, Risk Management, Soil Microbiology, Solute Transport

Principal Investigators: Srivastava, Puneet; Dane, Jacob H.; Feng, Yucheng

Federal Funds: $24,891

Non-Federal Matching Funds: $49,782

Abstract: This research will address knowledge gaps regarding antimicrobial fate and transport in soils by conducting miscible-displacement experiments in which solutions of commonly used veterinary antimicrobials are metered through different types of soil that are characteristic of the southeastern United States. Data generated by these experiments will be analyzed by implementing currently available solute transport models, which produce estimates of parameters representing antimicrobial diffusion-dispersion coefficients, retardation factor, distribution coefficients, and degradation rates. The main knowledge gaps regarding antimicrobial ecotoxicity are a paucity of data for effects on soil microorganisms and the soil processes they mediate. this research will address these gaps by assessing impacts of antimicrobials on the structure of soil microbial communities.

The project will be the first study of antimicrobial mixture transport in soils and the first study of antimicrobial ecotoxicity to soil organisms.